

EMISSION FACTORS	UoM	Year						Note
		2007	2008	2009	2010	2011	2012	
Steam purchased from Power plant	tCO <sub>2</sub> /t coal	2,57	2,57	2,57	2,57	2,57	2,57	data from Svilosa TPP 0.395 t co2/MWh x 6.5 MWh/t coal
Electricity purchased from the grid	tCO <sub>2</sub> /MWh	1,095	1,006	0,888	0,850	0,834	0,791	Determined by using the "simple adjusted operating margin"
Diesel	tCO <sub>2</sub> /ton fuel	3,21	3,21	3,21	3,21	3,21	3,21	Revised 1996 IPCC Guidelines for Nat.I GHG inventories
Heavy Fuel Oil n.6 (mazut)	tCO <sub>2</sub> /ton fuel	3,11	3,11	3,11	3,11	3,11	3,11	Revised 1996 IPCC Guidelines for Nat.I GHG inventories
Fuel Heating Values	UoM	2007	2008	2009	2010	2011	2012	Note
Coal	MWh/ton fuel	6,50	6,50	6,50	6,50	6,50	6,50	data supplied by Svilosa TPP
Heavy Fuel Oil	MWh/ton fuel	11,16	11,16	11,16	11,16	11,16	11,16	Revised 1996 IPCC Guidelines for Nat.I GHG inventories
Diesel	MWh/ton fuel	12,04	12,04	12,04	12,04	12,04	12,04	Revised 1996 IPCC Guidelines for Nat.I GHG inventories
Power Plant Thermal Efficiency	%	55%	55%	55%	55%	55%	55%	data supplied by Svilosa TPP
Electricity Transmission losses (ETL)	%	10%	10%	10%	10%	10%	10%	fixed

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-01
<b>Efficiency Measure:</b>	Replacement of cyclone evaporator with a new super concentrator for black liquor in Soda Recovery Boiler		

		Year						Note
		2007	2008	2009	2010	2011	2012	
<b>BASELINE CALCULATION</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Steam production from SRB	MWh	191 060	382 120	382 120	382 120	382 120	382 120	From energy efficiency data forms
Steam purchased from CHP	MWh	50 083	100 166	100 166	100 166	100 166	100 166	Considering 116,000 MWh from BB as per Biomass PDD
CO2 emissions from steam consumption	tCO <sub>2</sub>	36 027	72 054	72 054	72 054	72 054	72 054	

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-01
<b>Efficiency Measure:</b>	Reconstruction of Soda Recovery Boiler (SRB) and replacement of cyclone evaporator with a new super concentrator for black liquor		

		Year						Note
		2007	2008	2009	2010	2011	2012	
<b>PROJECT EMISSIONS</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Steam production after energy efficiency measure	MWh	218 322	436 644	436 644	436 644	436 644	436 644	
Steam purchased from CHP	MWh	22 821	45 642	45 642	45 642	45 642	45 642	
CO2 emissions from steam consumption	tCO <sub>2</sub>	16 416	32 833	32 833	32 833	32 833	32 833	

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-01
<b>Efficiency Measure:</b>	Reconstruction of Soda Recovery Boiler (SRB) and replacement of cyclone evaporator with a new super concentrator for black liquor		

		Year						Note
		2007	2008	2009	2010	2011	2012	
<b>EMISSIONS REDUCTION</b>								
Baseline scenario emission	tCO <sub>2</sub>	36 027	72 054	72 054	72 054	72 054	72 054	
Project scenario emission	tCO <sub>2</sub>	16 416	32 833	32 833	32 833	32 833	32 833	
Total project emission reduction	tCO <sub>2</sub>	19 611	39 222	39 222	39 222	39 222	39 222	Total crediting period 2007-2012= 215 719

Company: Svilosa AD

Reference: SVP-02

Efficiency Measure: Replacement of a barometric condensers with plate heat exchangers in evaporating systems for black liquor

		Year						
		2007	2008	2009	2010	2011	2012	Note
<b>BASELINE CALCULATION</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Steam consumption for evaporation of all water	MWh	69 864	139 727	139 727	139 727	139 727	139 727	From energy efficiency data forms
CO2 emissions from steam consumption	tCO <sub>2</sub>	50 256	100 513	100 513	100 513	100 513	100 513	

Company: Svilosa AD

Reference: SVP-02

Efficiency Measure: Replacement of a barometric condensers with plate heat exchangers in evaporating systems for black liquor

		Year						
		2007	2008	2009	2010	2011	2012	Note
<b>PROJECT EMISSIONS</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Steam consumption for evaporation of all water	MWh	46 519	93 038	93 038	93 038	93 038	93 038	From energy efficiency data forms
CO2 emissions from steam consumption	tCO <sub>2</sub>	33 463	66 927	66 927	66 927	66 927	66 927	

Company: Svilosa AD

Reference: SVP-02

Efficiency Measure: Replacement of a barometric condensers with plate heat exchangers in evaporating systems for black liquor

		Year						
		2007	2008	2009	2010	2011	2012	Note
<b>EMISSIONS REDUCTION</b>								
Baseline scenario emission	tCO <sub>2</sub>	50 256	100 513	100 513	100 513	100 513	100 513	
Project scenario emission	tCO <sub>2</sub>	33 463	66 927	66 927	66 927	66 927	66 927	
Total project emission reduction	tCO <sub>2</sub>	16 793	33 586	33 586	33 586	33 586	33 586	Total crediting period 2007-2012= 184 721

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-03
<b>Efficiency Measure:</b>	Installation of frequency control drives on electric motors		

		Year						Note
		2007	2008	2009	2010	2011	2012	
<b>BASELINE CALCULATION</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Electricity consumption from current motors	MWh	2 660	5 319	5 319	5 319	5 319	5 319	From energy efficiency data forms, including ETL
Electricity demand prior to distribution losses	MWh	2 955	5 910	5 910	5 910	5 910	5 910	
CO2 emissions from electricity consumption	tCO <sub>2</sub>	3 236	5 945	5 248	5 024	4 929	4 675	

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-03
<b>Efficiency Measure:</b>	Installation of frequency control drives on electric motors		

		Year						Note
		2007	2008	2009	2010	2011	2012	
<b>PROJECT EMISSIONS</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Electricity consumption from new motors	MWh	2 025	4 049	4 049	4 049	4 049	4 049	From energy efficiency data forms, including ETL
Electricity demand prior to distribution losses	MWh	2 249	4 499	4 499	4 499	4 499	4 499	
CO2 emissions from electricity consumption	tCO <sub>2</sub>	2 463	4 526	3 995	3 824	3 752	3 559	

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-03
<b>Efficiency Measure:</b>	Installation of frequency control drives on electric motors		

		Year						Note
		2007	2008	2009	2010	2011	2012	
<b>EMISSIONS REDUCTION</b>								
Baseline scenario emission	tCO <sub>2</sub>	3 236	5 945	5 248	5 024	4 929	4 675	
Project scenario emission	tCO <sub>2</sub>	2 463	4 526	3 995	3 824	3 752	3 559	
Total project emission reduction	tCO <sub>2</sub>	773	1 420	1 253	1 199	1 177	1 116	Total crediting period 2007-2012= 6 938

<b>Company:</b> Svilosa AD		<b>Reference:</b> SVP-04						
<b>Efficiency Measure:</b> Installation of a back pressure steam turbine to utilize steam generated by SRB and cogeneration of electricity								
		Year						
<b>BASELINE CALCULATION</b>		2007	2008	2009	2010	2011	2012	Note
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Electricity purchased from the grid	MWh	54 395	108 790	108 790	108 790	108 790	108 790	Considering 989 kWh/t pulp
Electricity demand prior to distribution losses	MWh	60 439	120 878	120 878	120 878	120 878	120 878	
CO2 emissions from electricity consumption	tCO <sub>2</sub>	66 181	121 603	107 339	102 746	100 812	95 614	

<b>Company:</b> Svilosa AD		<b>Reference:</b> SVP-04						
<b>Efficiency Measure:</b> Installation of a back pressure steam turbine to utilize steam generated by SRB and cogeneration of electricity								
		Year						
<b>PROJECT EMISSIONS</b>		2007	2008	2009	2010	2011	2012	Note
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Electricity generated from steam turbine	MWh	19 939	39 878	39 878	39 878	39 878	39 878	From energy efficiency data forms
Electricity purchased from the grid	MWh	34 456	68 912	68 912	68 912	68 912	68 912	
Electricity demand prior to distribution losses	MWh	38 284	76 568	76 568	76 568	76 568	76 568	
CO2 emissions from electricity consumption	tCO <sub>2</sub>	41 921	77 028	67 993	65 083	63 858	60 566	

<b>Company:</b> Svilosa AD		<b>Reference:</b> SVP-04						
<b>Efficiency Measure:</b> Installation of a back pressure steam turbine to utilize steam generated by SRB and cogeneration of electricity								
		Year						
<b>EMISSIONS REDUCTION</b>		2007	2008	2009	2010	2011	2012	Note
Baseline scenario emission	tCO <sub>2</sub>	66 181	121 603	107 339	102 746	100 812	95 614	
Project scenario emission	tCO <sub>2</sub>	41 921	77 028	67 993	65 083	63 858	60 566	
Total project emission reduction	tCO <sub>2</sub>	24 259	44 575	39 347	37 663	36 954	35 049	Total crediting period 2007-2012= 217 847

Company: Svilosa AD

Reference: SVP-05

Efficiency Measure: Installation of blow down heat recovery system for SRB

		Year						
		2007	2008	2009	2010	2011	2012	Note
<b>BASELINE CALCULATION</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Heat dissipated through water blow down	MWh	1 973	3 946	3 946	3 946	3 946	3 946	From energy efficiency data forms
CO2 emissions from steam consumption	tCO <sub>2</sub>	1 419	2 838	2 838	2 838	2 838	2 838	

Company: Svilosa AD

Reference: SVP-05

Efficiency Measure: Installation of blow down heat recovery system for SRB

		Year						
		2007	2008	2009	2010	2011	2012	Note
<b>PROJECT EMISSIONS</b>								
Total production	ton pulp	55 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in June 2007
Operating hours for SRB	hr.	4 020	8 040	8 040	8 040	8 040	8 040	Site data
Heat dissipated through water blow down	MWh	99	197	197	197	197	197	Considering 95% HX efficiency
CO2 emissions from steam consumption	tCO <sub>2</sub>	253	506	506	506	506	506	

Company: Svilosa AD

Reference: SVP-05

Efficiency Measure: Installation of blow down heat recovery system for SRB

		Year						
		2007	2008	2009	2010	2011	2012	Note
<b>EMISSIONS REDUCTION</b>								
Baseline scenario emission	tCO <sub>2</sub>	1 419	2 838	2 838	2 838	2 838	2 838	
Project scenario emission	tCO <sub>2</sub>	253	506	506	506	506	506	
Total project emission reduction	tCO <sub>2</sub>	1 166	2 332	2 332	2 332	2 332	2 332	Total crediting period 2007-2012= 12 825

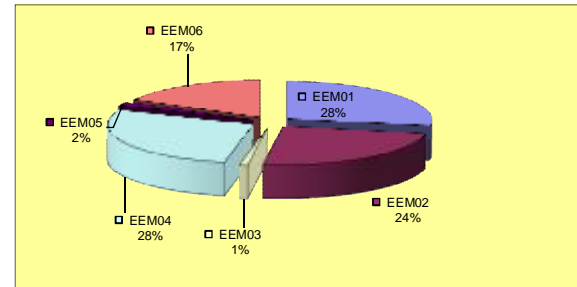
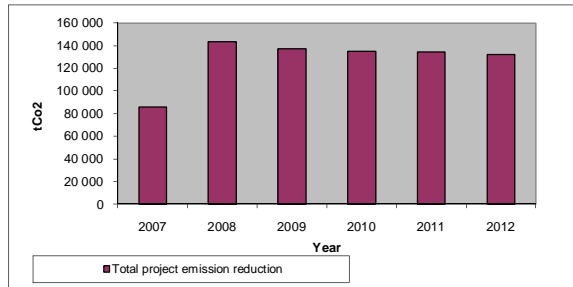
<b>Company:</b> Svilosa AD		<b>Reference:</b> SVP-06						
<b>Efficiency Measure:</b> Shift of production from pulp blocks to pulp sheets								
		Year						Note
<b>BASELINE CALCULATION</b>		2007	2008	2009	2010	2011	2012	
Total production	ton pulp	110 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in Aug 2006
Pulp blocks production	ton pulp	64 406	64 406	64 406	64 406	64 406	64 406	
Steam consumption from Power Plant	MWh	61 830	61 830	61 830	61 830	61 830	61 830	From energy efficiency data forms
Electricity consumption	MWh	20 037	20 037	20 037	20 037	20 037	20 037	From energy efficiency data forms, including ETL
Diesel consumption	MWh	31 008	31 008	31 008	31 008	31 008	31 008	From energy efficiency data forms
CO2 emissions from steam consumption	tCO <sub>2</sub>	44 477	44 477	44 477	44 477	44 477	44 477	
CO2 emissions from electricity consumption	tCO <sub>2</sub>	21 941	20 158	17 793	17 032	16 711	15 850	
CO2 emissions from diesel consumption	tCO <sub>2</sub>	8 275	8 275	8 275	8 275	8 275	8 275	
Total CO2 emissions	tCO <sub>2</sub>	74 694	72 910	70 546	69 785	69 464	68 602	

<b>Company:</b> Svilosa AD 9 403		<b>Reference:</b> SVP-06						
<b>Efficiency Measure:</b> Shift of production from pulp blocks to pulp sheets								
		Year						Note
<b>PROJECT EMISSIONS</b>		2007	2008	2009	2010	2011	2012	
Total production	ton pulp	110 000	110 000	110 000	110 000	110 000	110 000	Commissioning expected in Aug 2006
Additional pulp sheets production after line switching	ton pulp	64 406	64 406	64 406	64 406	64 406	64 406	
Steam consumption from Power Plant	MWh	54 101	54 101	54 101	54 101	54 101	54 101	From energy efficiency data forms
Electricity consumption	MWh	11 450	11 450	11 450	11 450	11 450	11 450	From energy efficiency data forms, including ETL
Diesel consumption	MWh	0	0	0	0	0	0	From energy efficiency data forms
CO2 emissions from steam consumption	tCO <sub>2</sub>	38 918	38 918	38 918	38 918	38 918	38 918	
CO2 emissions from electricity consumption	tCO <sub>2</sub>	12 538	11 519	10 168	9 732	9 549	9 057	
CO2 emissions from diesel consumption	tCO <sub>2</sub>	0	0	0	0	0	0	
Total CO2 emissions	tCO <sub>2</sub>	51 455	50 436	49 085	48 650	48 467	47 975	

<b>Company:</b> Svilosa AD		<b>Reference:</b> SVP-06						
<b>Efficiency Measure:</b> Shift of production from pulp blocks to pulp sheets								
		Year						Note
<b>EMISSIONS REDUCTION</b>		2007	2008	2009	2010	2011	2012	
Baseline scenario emission	tCO <sub>2</sub>	74 694	72 910	70 546	69 785	69 464	68 602	
Project scenario emission	tCO <sub>2</sub>	51 455	50 436	49 085	48 650	48 467	47 975	
Total project emission reduction	tCO <sub>2</sub>	23 238	22 474	21 461	21 134	20 997	20 628	Total crediting period 2007-2012= 129 933

<b>Company:</b>	Svilosa AD	<b>Reference:</b>	SVP-CONS					
<b>Efficiency Measure:</b>	Total ERUs form Project Activity							
Year								
<b>EMISSIONS REDUCTION</b>	2007	2008	2009	2010	2011	2012	Note	
Baseline scenario emission	tCO <sub>2</sub>	231 813	375 864	358 539	352 960	350 610	344 297	Total baseline emissions 2007-2012= 2 014 082
Project scenario emission	tCO <sub>2</sub>	145 973	232 256	221 339	217 823	216 343	212 365	Total project emissions 2007-2012= 1 246 099
Total project emission reduction	tCO <sub>2</sub>	85 840	143 608	137 200	135 136	134 267	131 932	Total ERUs 2007-2012= 767 983

85 840  
682 143



Breakdown emission reduction per measure	tCO <sub>2</sub>	EEM01	EEM02	EEM03	EEM04	EEM05	EEM06	tot
		215 719	184 721	6 938	217 847	12 825	129 933	767 983

